

# Lesson 2-1

## Finding the Mean

### Lesson Objective

To find and analyze the mean of a data set using models and calculations

NAEP 2005 Strand: Data Analysis and Probability

Topic: Characteristics of Data Sets

Local Standards: \_\_\_\_\_

### Vocabulary

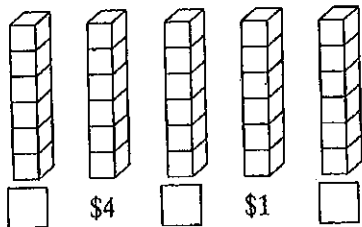
The  is the sum of a set of data divided by the number of data items.

An outlier is \_\_\_\_\_

### Example

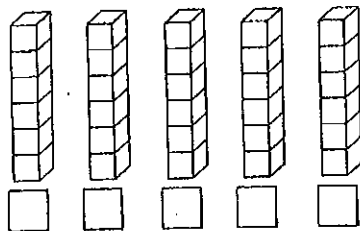
1. **Using a Model to Find the Mean** In five days Rebecca spent \$3, \$4, \$2, \$1, and \$5. Find the mean amount of money spent.

Shade in the cubes to model the situation.



← Shade the cubes to model the amount of money spent each day.

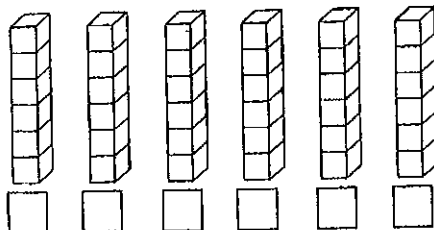
There are  shaded cubes altogether.



← Next, shade in the correct number of cubes so that the height of each stack is the same.

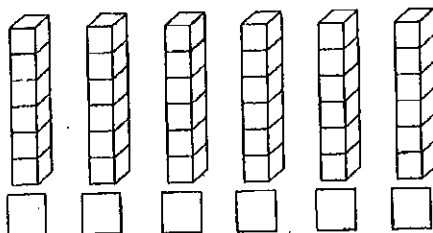
### Quick Check

1. Use a model to find the mean of 3, 6, 3, 4, 2, and 6.



← Shade the cubes to model the amount of money spent each day.

There are  shaded cubes altogether.



← Next, shade in the correct number of cubes so that the height of each stack is the same.

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### Examples

- ② **Calculating the Mean** Find the mean test score of 78, 85, 94, 88, and 91.

$$78 + 85 + 94 + 88 + 91 = \boxed{\phantom{000}} \leftarrow \text{Add the test scores.}$$

$$\frac{\boxed{\phantom{000}}}{\boxed{\phantom{00}}} = \boxed{\phantom{00}} \leftarrow \text{Divide by the number of tests.}$$

The mean test score is  $\boxed{\phantom{00}}$ .

**Check for Reasonableness** The mean is between the lowest value,  $\boxed{\phantom{00}}$ , and the greatest value,  $\boxed{\phantom{00}}$ . So the answer  $\boxed{\phantom{00}}$  is reasonable.

- ③ **Analyzing the Mean** Identify the outlier in the data set 64, 66, 61, 91, 68 and 59. Find the mean with and without the outlier. What effect does the outlier have on the mean?

The outlier is  $\boxed{\phantom{00}}$ .

Calculate the mean with the outlier.

$$64 + 66 + 61 + \boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} \approx \boxed{\phantom{000}}$$

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Calculate the mean *without* the outlier.

$$\boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} + \boxed{\phantom{00}} = \boxed{\phantom{000}}$$

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The outlier increases the value of the mean by about  $\boxed{\phantom{00}}$ .

### Quick Check

2. You play a word game. Your scores are 12, 23, 19, 32, and 26. Find your mean score.

3. You keep track of the number of hours you baby-sit for six days: 1.25, 1.50, 1.50, 1.75, 2.0, 5.5. What effect does the outlier have on the mean?

## Homework Exercises

Show Your Work!	Corrections/Comments/Explanations
<p><b>(1)</b> You keep track of the time you spend doing homework each evening. You spend 58 minutes, 36 minutes, 44 minutes and 37 minutes. Find the <b>mean</b> of these times.</p>	
<p><b>(2)</b> Find the mean of this data set:</p> <p style="text-align: center;"><b>12, 9, 11 8, 9, 12 and 9</b></p>	
<p><b>(3)</b> Find the mean of this data set:</p> <p style="text-align: center;"><b>2.4, 1.8, 3.5, 2.3 and 6.5</b></p>	
<p><b>(4)</b> Explain in at least <b>2-3</b> complete sentences why the mean might not be a good measure for a set of data when the set includes <b>outliers</b>.</p>	

**(5)** Identify the **outlier** in this set of data. Then determine the effect the outlier has on the mean (does it increase or decrease the mean?)

8, 7, 10, 12, 8, 11, 8, 6, 9, 50, 8, 10, 7, 7

Outlier \_\_\_\_\_

Effect it has on the mean \_\_\_\_\_

**(6) Review (1-7)** Kristi received scores of 5.2 and 2.3 on her two ice skating routines. What is the difference between these scores?

**(7) Challenge** The average of four numbers is 98. If three of the numbers are 86, 87, and 91, what is the fourth number?